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Healthcare-associated infections studies project: An American Journal of Infection Control and National Healthcare Safety Network data quality collaboration 2016 Case #1

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This is the first case study published in a series in the American Journal of Infection Control (AJIC) since the Centers for Disease Control and Prevention/ National Healthcare Safety Network (NHSN) surveillance definition update of 2016. These cases represent some of the complex patient scenarios IPs have encountered in their daily surveillance of healthcare-associated infections (HAI) using NHSN procedural approach and definitions. Case study objectives have been previously published. (1)

With each case, a link to an online survey is provided, where you may enter answers to questions and receive immediate feedback in the form of correct answers and explanations. All individual participant answers will remain confidential, although it is the authors' intention to share a summary of the survey responses at a later date. Cases, answers, and explanations have been reviewed and approved by NHSN staff. We hope that you will take advantage of this offering, and we look forward to your active participation. The online survey may be found at: _____

We strongly recommend that you review/reference the NHSN Patient Safety Component Manual, Multidrug-Resistant Organism and *Clostridium difficile* Infection (MDRO/CDI) Module for information you may need to answer the case study questions and use the MDRO and CDI LabID Event calculator as needed. The website links are:

http://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf

http://www.cdc.gov/nhsn/labid-calculator/index.html

The findings and conclusions in this case study are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

For each question, please select the **most correct answer**.

Scenario #1

Assume your facility is actively enrolled in NHSN and that your monthly reporting plan includes facility- wide inpatient (FacWideIN) and CMS REHAB (CMS-certified inpatient rehabilitation unit [CMS IRF] {different CCN than acute care facility}) LabID event reporting for MRSA blood specimens only and *Clostridium difficile* positive laboratory assays.

On August 31, 2015 at 11AM, a 55-year-old male patient presents to your emergency department (ED) complaining of pain and tenderness of the right lower forearm. On August 15, 2015 he was discharged from a community psychiatric facility for treatment of depression. An examination of the area reveals erythema and swelling with purulent drainage. The patient is a known intravenous drug user from his past medical history and admits to recent use of this area for injection of heroin. His temperature is 100.8° F with other vital signs stable. Pus from the forearm is obtained for culture, the area is superficially debrided and a dressing applied. The patient is started on trimethoprim-sulfamethoxazole. During preparation for discharge, the patient complains of a chill and vital signs reveal a temperature of 101. 2° F and a slight decrease in BP. At 12:15AM on September 1, 2015, the patient is placed on the 24-hour observation unit where blood is collected for culture and intravenous fluids started. During the evening, the patient continues with fever and antibiotic therapy is changed to intravenous Vancomycin. At 11PM, the patient is transferred to the 3N-stepdown inpatient ward.

On September 2nd, the patient remains febrile with a maximum temperature of 102° F with periodic drops in blood pressure to 90/60 responsive to fluid boluses. The microbiology laboratory notifies the physician that the blood specimen collected September 1st is growing gram-positive cocci. Another set of blood cultures are obtained. During rounds, the physician detects the presence of a cardiac murmur and the patient is sent for an echocardiogram, which is suggestive of right-sided endocarditis. A peripherally-inserted central catheter is placed for vascular access. On September 3rd, the patient remains febrile and an Infectious Disease consultation is obtained. The wound and blood cultures from September 1st are reported to be growing methicillin-resistant *Staphylococcus aureus* (MRSA). The blood cultures obtained on September 2nd are also reported to be growing MRSA.

1. Would you identify the blood collected for culture on September 1st and positive for MRSA as a MRSA bacteremia laboratory-identified (LabID) event for facility-wide inpatient (FacWideIN) reporting?

- **a.** No. The patient has a community-onset MRSA bacteremia.
- **b.** No. The patient has a community-onset MRSA skin infection with a secondary bacteremia.
- **c.** **Yes. The result would be identified as a MRSA bacteremia LabID event for the 24-hour observation unit because this is where the specimen was collected.**

d. Yes. The result would be identified as a MRSA bacteremia for 3N-stepdown because the specimen was collected from the 24-hour observation unit on the same calendar day as admission to 3N-stepdown.

RATIONALE: Any specimen, obtained for clinical decision making, testing positive for MRSA that is not a duplicate isolate for the patient and location meets the definition for a MRSA bacteremia LabID event and should be submitted as such. LabID events are attributed to the location where the positive specimen is collected. In this case scenario, the September 1st specimen is collected when the patient is housed on the 24-hour observation unit thus, this is the location of attribution. Note that although emergency departments and 24-hour observation locations are considered outpatient locations by NHSN, as of January 2015, lab ID events attributed to these locations must also be reported as a part of FacWideIN LabID event reporting for facilities participating in the CMS Hospital IQR Program. Note: A 'duplicate' isolate is defined as any isolate other than the initial positive isolate for the same patient for the same location.

2. If the blood collected for culture on September 1st and positive for MRSA is a MRSA bacteremia LabID event, what date should be recorded as the date of admission to the facility for reporting to the National Healthcare Safety network (NHSN)?

a. August 31st

b. September 1st

c. September 2nd

d. **None. The 'admit to facility' question should be left blank**

RATIONALE: The question 'date admitted to facility' is optional on all outpatient location based LabID events; regardless of the duration of time between presentation to the outpatient location and the specimen collection date, the 'admit to facility' question may be left blank since all outpatient events are considered community-onset (CO) events.

3. Would you identify the blood collected for culture on September 2nd and positive for MRSA as a MRSA bacteremia LabID event for FacWideIN reporting?

a. No. Because this is the second positive MRSA blood culture collected from this patient within 14 days, this is considered a duplicate MRSA bacteremia LabID event.

b. Yes. The result would be identified as a MRSA bacteremia LabID event for the 24-hour observation unit because the

patient was in that location within the prior 2 calendar days and the transfer rule applies.

c. No. The patient had symptoms of bacteremia ≤ 3 days after admission.

d. **Yes. As there were no prior MRSA positive blood specimens for this patient in this location (3N-stepdown) collected within 14 days, the result would be identified as a unique MRSA bacteremia LabID event for 3N-stepdown.**

RATIONALE**:** LabID event reporting is unique to patient and location. As there were no prior MRSA positive blood specimens for this patient for the 3N-stepdown location, the positive MRSA blood culture is a unique MRSA bacteremia LabID event for 3N-stepdown and should be submitted as a new LabID event. The 14-day rule does not cross locations.

4. If the blood collected for culture on September 2nd and positive for MRSA is a MRSA bacteremia LabID event, what is the date of admission used for reporting of this event to NHSN?

a. August 31st

b. **September 1st**

c. September 2nd

d. None. The 'admit to facility' question should be left blank

RATIONALE: For NHSN reporting purposes, the date of admission to the facility is the date the patient physically locates to an inpatient location. As both the ED and the 24-hour observation units are outpatient locations for the acute care facility, the date of admission is the date the patient physically locates to the 3N-stepdown inpatient ward, or September 1st. The admit date should only match the date the patient presented to the ED/24-hour observation location if the patient is admitted to an inpatient location on the same calendar day.

5. If the blood collected for culture on September 2nd and positive for MRSA is a MRSA bacteremia LabID event, how will the event be categorized by the National Healthcare Safety network (NHSN) application?

a. **Community-onset (CO) because the specimen was collected ≤ 3 days after admission to the facility.**

b. Community-onset healthcare facility-associated (CO-HFCA) because the specimen was collected ≤ 3 days after admission to the facility and the patient was discharged from another healthcare facility ≤ 4 weeks prior to the current date of the blood specimen collection.

c. Healthcare-onset (HO) because the specimen was collected on hospital day 4.

RATIONALE: LabID events are categorized using the patient admit date and specimen collection date. A community-onset (CO) event is defined as a positive specimen collected on hospital day 1 (day of admission), hospital day 2 or hospital day 3. Healthcare-onset (HO) events are LabID events where the positive specimen is collected on or after hospital day 4. The Community-onset healthcare facility associated (CO-HCFA) is not available for use with MRSA bacteremia LabID events, as it is specific to *C. difficile* LabID events only. In this case, September 1st is the date of admission to the facility as it is the date the patient physically located to an inpatient location. The MRSA positive blood culture collected on September 2nd and positive for MRSA was collected on hospital day 2 (date of admission = hospital day 1) and therefore meets the CO definition.

The patient remained on the 3N-stepdown unit for cardiac monitoring and administration of intravenous antibiotics. On September 17th, the patient is transferred to the CMS IRF unit within your hospital for intensive physical therapy. Upon arrival, the patient is noted to have a temperature of 100.4° F and blood is collected for culture on the same day patient arrived in the IRF unit; the blood culture and is positive for MRSA on the next day.

6. Would you identify the blood collected for culture on September 17th and positive for MRSA as a MRSA bacteremia LabID event for your facility?

a. No. The result would be considered a duplicate episode of MRSA bacteremia and would not be reported as a separate LabID event for FacWideIN reporting.

b. **Yes. The result would be identified as a unique MRSA bacteremia LabID event for the inpatient rehabilitation unit because the specimen was collected in a location with no prior MRSA blood culture reported within 14 days for the patient *and* location.**

c. Yes. The result would be identified as a MRSA bacteremia LabID event for 3N-stepdown because the specimen was collected 14 days after the last positive specimen for 3N-stepdown and the patient was in that location within the last 2 calendar days. Therefore the transfer rule applies.

d. No. My facility is not required to report MRSA bacteremia LabID events from CMS-certified inpatient rehabilitation units.

RATIONALE: The MRSA positive blood collected on September 17th, the day of admission to the IRF, is a unique MRSA bacteremia LabID event

for this location and should be reported as a LabID event for the IRF location. For IRFs located within an acute care facility that operate under a unique CCN and participate in the inpatient rehabilitation facility quality reporting (IRFQR) program for CMS, LabID event reporting is a part of required reporting as of 1/1/15. This event is considered a 'unique' MRSA bacteremia LabID event as the 'transfer rule' used in other NHSN modules does not apply to LabID event reporting (as noted in chapter 2 and 12 of the patient safety manual).

7. If the blood collected for culture on September 17th and positive for MRSA is a MRSA bacteremia LabID event for the CMS IRF unit, how will the event be categorized by the NHSN application?

- **a.** This MRSA LabID event would not be further categorized by NHSN because it represents a duplicate episode of MRSA bacteremia.
- **b.** An incident event because the September 17th specimen result is considered a new MRSA bacteremia LabID event for the patient for this location.
- **c.** **A prevalent event for the CMS-IRF unit because the MRSA bacteremia LabID event specimen was collected in the unit ≤ 3 days after admission into that location.**
- **d.** An incident event for FacWideIN since the specimen was collected >14 days after the last positive MRSA blood specimen for the patient.

RATIONALE: Within analysis in NHSN, the date of admission to the IRF will be used to distinguish prevalence versus incidence as it will allow the IRF LabID event data to be analyzed separately from the acute care facility. In contrast, non-IRF locations within the acute care facility analysis uses the date of admission to the facility to determine prevalence versus incidence. An IRF prevalent event is a LabID Event specimen collected in the IRF unit ≤ 3 days after admission into the IRF unit (IRF day 1 [admission], 2, or 3). An IRF incident LabID Event is one where the positive specimen is collected > 3 days after admission to the IRF unit (i.e., on or after IRF day 4). In this case, the IRF LabID event is a prevalent event as the positive specimen is collected on the day of admission to the IRF.

8. If the blood collected for culture on September 17th and positive for MRSA is a MRSA bacteremia LabID event for the CMS IRF unit, what date should be used as "admit to facility date" when reporting?

- **a.** September 17th since that is the date the patient is admitted to the CMS IRF unit

b. August 31st since that is the date the patient is first seen and the stay is considered a 'continuous' hospitalization

c. **September 1st since that is the date the patient is physically located to an inpatient location in the facility and the stay is considered a 'continuous' hospitalization**

d. September 1st since that is the date of the first MRSA bacteremia LabID event

RATIONALE: For NHSN reporting purposes, the hospitalization is considered "continuous" thus, the "admit to facility date" is the date the patient first locates to an inpatient location for the facility or September 1st.

References

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